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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellant: Gibson
Serial No.: 10/660,297
Filed: September 10, 2003
Title: A DATA STORAGE DEVICE AND A METHOD OF READING DATA IN A DATA STORAGE DEVICE

Examiner: Bhat, Aditya S.
Group Art Unit: 2863
Docket No.: 200310982-1

APPEAL BRIEF UNDER 37 C.F.R. §41.37

Mail Stop Appeal Brief -- Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir/Madam:

This Appeal Brief is submitted in support of the Notice of Appeal filed on February 19, 2007, appealing the final rejection of claims 1-10, 12-19, and 21-22 of the above-identified application as set forth in the Final Office Action mailed November 8, 2006.

The U.S. Patent and Trademark Office is hereby authorized to charge Deposit Account No. 08-2025 in the amount of \$500.00 for filing a Brief in Support of an Appeal as set forth under 37 C.F.R. §41.20(b)(2). At any time during the pendency of this application, please charge any required fees or credit any overpayment to Deposit Account No. 08-2025.

Appellant respectfully requests consideration and reversal of the Examiner's rejection of pending claims 1-10, 12-19, and 21-22.

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REAL PARTY IN INTEREST

The real party in interest is Hewlett-Packard Development Company, LP having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant that will have a bearing on the Board's decision in the present Appeal.

STATUS OF CLAIMS

In a Final Office Action mailed November 8, 2006, claims 1-10, 12-19, and 21-22 were finally rejected. Claims 11, 20 and 23-24 were previously canceled. Claims 1-10, 12-19, and 21-22 are pending in the application, and are the subject of the present Appeal.

STATUS OF AMENDMENTS

No amendments have been entered subsequent to the Final Office Action mailed November 8, 2006. A Response After Final was filed on January 8, 2007 however, no amendments to the claims were proposed by Appellants or entered by the Examiner.

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SUMMARY OF THE CLAIMED SUBJECT MATTER

The Summary is set forth as an exemplary embodiment as the language corresponding to independent claims 1 and 13. Discussions about elements of claims 1 and 13 can be found at least at the cited locations in the specification and drawings.

An embodiment of the present invention, as claimed in independent claim 1, provides a data storage device. The device includes a probe tip mounted on a suspension mechanism, a data storage layer, at least one conducting layer wherein a capacitance is formed between the suspension mechanism and the at least one conducting layer wherein a first capacitance is formed on a first side of the suspension mechanism and a second capacitance is formed on a second side of the suspension mechanism and a sensor for sensing a change in the capacitance based on a displacement of the probe tip due to the presence of a bit. (See, e.g., specification at page 8, line 4 –page 11, line 11; Figures 2 and 3; reference numbers 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 300, 302, 304, 308, 310, 312, 314, 316, 318, 320.)

Another embodiment of the invention, as claimed in independent claim 13, provides a method of reading data from a data storage device. The method includes the steps of suspending a probe tip over a data storage layer via a suspension mechanism, providing at least one conducting layer wherein a capacitance is formed between the suspension mechanism and the at least one conducting layer wherein a first capacitance is formed on a first side of the suspension mechanism and a second capacitance is formed on a second side of the suspension mechanism and reading data from the storage device by sensing a change in the capacitance based on a displacement of the probe tip due to the presence of a bit. (See e.g., specification at page 7, line 19 –page 11, line 11; Figures 1-3; reference numbers , 110, 120, 120, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 300, 302, 304, 308, 310, 312,

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314, 316, 318, 320.)

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

- i. Claims 1-10, 12-19 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hong et al. (USPN 2003/0202456) in view of Min et al. (USPUB 2003/0210640).

ARGUMENT

I. The Applicable Law

When making an obvious rejection under 35 U.S.C. § 103, a necessary condition is that the combination of the cited references must teach or suggest all claim limitations. If the cited references do not teach or suggest every element of the claimed invention, then the cited references fail to render obvious the claimed invention, i.e. the claimed invention is distinguishable over the combination of the cited references.

Additionally, for reference structures to be properly combined and thereby render a claimed invention obvious, there must be some motivation for the combination i.e. there must be some teaching, suggestion, or incentive to make the combination claimed by the appellant. *Northern Telecom, Inc. v. Datapoint Corp.* 15 USPQ2d 1321, 1323 (CAFC 1990).

Motivation coming from the appellant's own disclosure is not sufficient. Nor is it sufficient that those of ordinary skill in the art had the capability to combine the referenced structure or understood the advantages of the combination. Although an Examiner may suggest that the structure of a primary prior art reference *could* be modified in view of a secondary prior art reference to form the claimed structure, the mere fact that the prior art *could* be so modified does not make the modification obvious *unless the prior art suggested the desirability of the*

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modification. In re Newell, 891 F.2d 899, 13 USPQ2d 1248 (CAFC 1989). (Emphasis added.)

II. Rejection of Claims 1-10, 12-19 and 22 under 35 U.S.C. §103(a) as being unpatentable over *Hong et al.* (USPN 2003/0202456) in view of *Min et al.* (USPUB 2003/0210640).

The Examiner rejected claims 1-10, 12-19 and 22 under 35 U.S.C. §103(a) as being unpatentable over *Hong et al.* (USPN 2003/0202456) in view of *Min et al.* (USPUB 2003/0210640). Appellants respectfully submit that *Hong et al.* in view of *Min et al.* does not teach or suggest the invention of independent claims 1, 13 and the claims depending therefrom.

The Examiner asserts that the present invention is obvious based on *Hong et al.* in view of *Min et al.* *Hong et al.* discloses an apparatus and a method for reproducing data using capacitance. The apparatus includes a tip, a cantilever, a positioning portion, a power supply, an electrostatic force measuring portion, and a controller. The tip contacts a recording medium on which data is recorded by a bit. The cantilever is made of conductive material and has a free end for supporting the tip. The positioning portion moves the cantilever so as to determine a position of the tip on the recording medium.

Min et al. discloses a data storage apparatus adopting a time division multiplexing technique, and a data recording method and a data reproduction method both using the apparatus, are provided. In the data storage apparatus, a recording medium stores data, and a stage supports the recording medium. A scanner drives the stage, and a cantilever array composed of a plurality of cantilevers record data to and reproducing data from the recording medium in a data detecting sequence. A controller detects data by applying a scanner driving

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signal to the scanner and applying a voltage signal for data recording or a voltage modulation signal for data reproduction to the plurality of cantilevers.

The Examiner concedes that *Hong et al.* does not expressly disclose the limitation of "...wherein a first capacitance is formed on a first side of the suspension mechanism and a second capacitance is formed on a second side of the suspension mechanism..." as recited in amended independent claims 1 and 13. The Examiner then asserts that *Min et al.* discloses forming a capacitance on both sides of the cantilever. Accordingly, since *Hong et al.* and *Min et al.* are analogous art, it would have been obvious to one skilled in the art at the time of the invention to combine *Hong et al.* with *Min et al.* to arrive at the Appellant's recited invention of claims 1 and 13.

Appellant argued in the response filed August 30, 2006, that *Min* does not teach forming a first capacitance on a first side of the suspension mechanism and forming a second capacitance on a second side of the suspension mechanism. However, the Examiner argues in the final office action dated November 8, 2006 that the claimed invention is believed to read on the *Min et al.* reference. Appellant respectfully disagrees.

The Examiner stipulates that since a capacitance is formed on either of a supporter 12 (either end of the cantilever 8) the *Min et al.* reference discloses forming a first capacitance on a first side of the suspension mechanism and forming a second capacitance on a second side of the suspension mechanism. Appellant respectfully disagrees and asserts that the *Min et al.* reference discloses a first capacitance is formed on a first side of a *supporter* and a second capacitance is formed on a second side of a *supporter*. A supporter as disclosed in the *Min et al.* reference, is clearly different from a suspension mechanism, as recited in

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independent claims 1 and 13. Appellant accordingly asserts that a first capacitance formed on a first side of a *supporter* and a second capacitance formed on a second side of a *supporter* is clearly different than a first capacitance is formed on a first side of a *suspension mechanism* and a second capacitance is formed on a second side of a *suspension mechanism* as recited in independent claims 1 and 13. Consequently, *Hong et al.* in combination with the *Min et al.* does not teach or suggest all of the claim limitations of the independent claims 1 and 13. Accordingly, independent claims 1 and 13 are allowable over the *Hong et al.* reference in view of the *Min et al.* reference.

Furthermore, although an Examiner may suggest that the structure of a primary prior art reference *could* be modified in view of a secondary prior art reference to form the claimed structure, the mere fact that the prior art *could* be so modified does not make the modification obvious *unless the prior art suggested the desirability of the modification*. *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (CAFC 1989). (Emphasis added.)

In this particular instance, the Examiner purports to combine the *Hong et al.* reference with the *Min et al.* reference. The Examiner asserts that the motivation to combine the two references is based on the notion that it would've been obvious to modify the *Hong* reference to form a capacitance on both sides of the cantilever taught by *Min et al.* in order to improve linearity, the size and sensitivity of a detection signal. However, Appellant asserts that there is no suggested desirability other than the Appellant's own disclosure for the Examiner's proposed modification. Appellant therefore asserts that the Examiner's proposed combination of references is based on hindsight reasoning and is improper according to the above-outlined patent case law. Accordingly the rejection of independent claims 1 and 13 as

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being unpatentable over Hong et al. (USPN 2003/0202456) in view of Min et al. (USPUB 2003/0210640) under 35 U.S.C. §103(a) should be withdrawn.

Claims 2-10, 12 and Claims 14-19, 21-22 respectively depend from independent Claims 1 and 13 and inherit all of their limitations. Therefore, Claims 2-10, 12 and Claims 14-19, 21-22 are patentably distinct in view of *Hong et al.* in combination with the *Min et al.* and the rejections of Claims 2-10, 12 and Claims 14-19, 21-22 under 35 U.S.C. §103(a) ought to now be withdrawn.

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CONCLUSION

For the above reasons, Appellants respectfully submit that the cited references neither anticipate nor render obvious claims of the pending Application. The pending claims distinguish over the cited references, and therefore, Appellants respectfully submit that the rejections must be withdrawn, and respectfully request the Examiner be reversed and claims 1-10, 12-19, and 21-22 be allowed.

Any inquiry regarding this Response should be directed to Wendell J. Jones at Telephone No. (408) 938-0980. In addition, all correspondence should continue to be directed to the following address:

IP Administration
Legal Department, M/S 35
HEWLETT-PACKARD COMPANY
P.O. Box 272400
Fort Collins, Colorado 80527-2400

Respectfully submitted,

Gibson.

By their attorney,

Wendell J. Jones

Wendell J. Jones

Reg. No. 45,961

Date: 5/21/07

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1. (Previously Amended) A data storage device comprising:
 - a probe tip mounted on a suspension mechanism;
 - a data storage layer;
 - at least one conducting layer wherein a capacitance is formed between the suspension mechanism and the at least one conducting layer wherein a first capacitance is formed on a first side of the suspension mechanism and a second capacitance is formed on a second side of the suspension mechanism; and
 - a sensor for sensing a change in the capacitance based on a displacement of the probe tip due to the presence of a bit.
2. (Original) The data storage device of claim 1 wherein the data storage layer is in contact with the probe tip.
3. (Original) The data storage device of claim 2 wherein the data storage layer includes the bit and the bit comprises at least one of a pit or a protrusion.
4. (Original) The data storage device of claim 1 wherein the data storage layer comprises a polymer material.
5. (Previously Amended) The data storage device of claim 1 wherein the at least one conducting layer comprises a conducting thin film.
6. (Original) The data storage device of claim 5 wherein the conducting thin film comprises at least one of a deposited metal film of Mo, Cu, TA.
7. (Original) The data storage device of claim 1 wherein the conducting layer comprises a conducting substrate.

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8. (Original) The data storage device of claim 7 wherein the conducting substrate comprises a doped silicon material.

9. (Original) The data storage device of claim 1 wherein the suspension mechanism includes a flexible cantilever.

10. (Original) The data storage device of claim 9 wherein the capacitance is formed on at least one side of the flexible cantilever.

11. Previously canceled.

12. (Previously Amended) The data storage device of claim 10 wherein the change in capacitance comprises a difference in capacitance between the first capacitance and the second capacitance.

13. (Previously Amended) A method of reading data from a data storage device comprising:

suspending a probe tip over a data storage layer via a suspension mechanism;

providing at least one conducting layer wherein a capacitance is formed between the suspension mechanism and the at least one conducting layer wherein a first capacitance is formed on a first side of the suspension mechanism and a second capacitance is formed on a second side of the suspension mechanism; and

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reading data from the storage device by sensing a change in the capacitance based on a displacement of the probe tip due to the presence of a bit.

14. (Original) The method of claim 13 wherein the data storage layer comprises a polymer material.

15. (Original) The method of claim 13 wherein the at least one conducting layer comprises a conducting thin film.

16. (Previously Amended) The method of claim 15 wherein the conducting thin film comprises at least one of a deposited metal film of Mo, Cu, TA, and an alloy.

17. (Original) The method of claim 13 wherein the at least one conducting layer comprises a conducting substrate.

18. (Original) The method of claim 17 wherein the conducting substrate comprises a doped silicon material.

19. (Original) The method of claim 13 wherein the suspension mechanism further includes a flexible cantilever and the act of providing at least one conducting layer further comprises providing a conducting layer within the suspension mechanism whereby a capacitance is formed between the conducting layer and the flexible cantilever.

20. Previously canceled.

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21. (Previously Amended) The method of claim 19 wherein the act of sensing a change in capacitance comprises sensing a difference in capacitance between the first and second capacitance.

22. (Original) The method of claim 13 wherein the data storage layer includes the bit and the bit comprises at least one of a pit or protrusion.

23. Previously canceled.

24. Previously canceled.

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EVIDENCE APPENDIX

None.

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RELATED PROCEEDINGS APPENDIX

None.